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10/596,540	06/15/2006	Jaewoo Ahn	20040-00016	7727

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JHK LAW
P.O. BOX 1078
LA CANADA, CA 91012-1078

EXAMINER	
ZUBAJLO, JENNIFER L	
ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/596,540	AHN ET AL.	
	Examiner	Art Unit	
	JENNIFER ZUBAJLO	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☒ Claim(s) *9-21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 June 2009* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of John W. Thompson, Jr. (Patent Number: US 5,236,199).

As to claim 1, AAPA teaches a mouse for three-dimensional rotation or translation control, in which an application program runs to rotate and to translate a predetermined three-dimensional object on a display screen, the mouse comprising: b) a microcomputer for recognizing the depressed combination of inputs, the order of the inputs, and the input time and outputting a control signal so as to rotate or to translate a portion of or whole configuration of the three-dimensional object on the display screen (see fig. 1 and [0003]-[0004]).

AAPA does not directly teach a button-type device for three-dimensional rotation or translation control, the button-type device comprising: a) a button-part including 9 buttons of a 3.times.3 array and having combinations of buttons on horizontal, vertical, and diagonal lines, corresponding to the direction of rotation or translation of a three-dimensional object on the three-dimensional axis of rotation or along the axis of translation.

Thompson teaches a button-type device (corresponding to mouse input – see fig. 1A), the button-type device comprising: a) a button-part including 9 buttons of a 3.times.3 array and having combinations of buttons on horizontal, vertical, and diagonal lines (see fig. 1A – note that the size of the array is simply a choice of design and any number array can be used since the keys are programmable), corresponding to the direction of rotation or translation of a three-dimensional object on the three-dimensional axis of rotation or along the axis of translation (note that since the buttons of fig. 1A correspond to mouse input, the buttons would also correspond to well known mouse rotation and translation capabilities).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the mouse buttons of Thompson into the well known mouse for rotation and translation of 3D objects because programmable buttons that perform mouse functions are well known in the art.

As to claim 2, the combination of AAPA and Thompson teach a device according to claim 1 (see above rejection), wherein the three-dimensional object is a cube box having a whole configuration of a cube (note that the 3d object can be any object).

As to claim 3, the combination of AAPA and Thompson teach a device according to claim 2 (see above rejection), wherein the axes of the three-dimensional object comprise: a) an X axis, a Y axis, and a Z axis; b) a HH axis which exists on a same plane of the X and the Y axis at an angle of 45 degrees from the -X and the Y axis; and c) 4 diagonal axes which link a vertex of each regular square, which composes a unit surface of a solid cube, to a vertex of an opposite side by way of a center of mass (this is well known for 3d objects).

As to claim 4, the combination of AAPA and Thompson teach a device according to claim 3 (see above rejection), further comprising a memory which stores a unit angle of rotation of the predetermined three-dimensional object (see AAPA fig. 1 – microcomputer).

As to claim 5, the combination of AAPA and Thompson teach a device according to claim 4 (see above rejection), wherein the microcomputer determines the direction of rotation of the three-dimensional object, either clockwise rotation or counterclockwise rotation, according to the order of buttons depressed by means of the button-part, and the angle of rotation according to the unit angle of rotation stored in the memory (see AAPA fig. 1 and Thompson fig. 1A – note that the order of buttons pressed corresponding to the mouse function of AAPA would determine rotation direction).

As to claim 6, the combination of AAPA and Thompson teach a device according to claim 4 (see above rejection), wherein the microcomputer, when a predetermined button is depressed, generates a control signal to switch an operation mode from a rotation mode in which a three-dimensional object is rotated on each axis to a translation mode in which the three-dimensional object is translated in the (+) or (-) direction of each axis, or vice versa (note that the butons of Thompson fig. 1A correspond to the mouse function of AAPA that provides translation or rotation).

As to claim 7, the combination of AAPA and Thompson teach a device according to claim 6 (see above rejection), wherein the microcomputer, according to the depression of the predetermined button, generates a control signal to change the axis on which the three-dimensional object is rotated or translated (see Thompson fig. 1 – buttons esc, left, right, lock and AAPA fig. 1 & description).

As to claim 8, the combination of AAPA and Thompson teach a device according to claim 7 (see above rejection), wherein the microcomputer, according to the time of the depression of the predetermined button, generates a control signal for unit translation or continuous translation (see Thompson fig. 1 – buttons esc, left, right, lock and AAPA fig. 1 & description – note that by holding down the lock, left, or right button with an arrow button corresponding to the mouse would allow for continuous translation).

Allowable Subject Matter

4. Claims 9-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

For example, claim 9 would be allowable if rewritten in independent form including all the limitations from claims 1, 2, 3, 4, 6, 7, and 8 such that it reads: A button-type device for three-dimensional rotation or translation control, in which an application program runs to rotate and to translate a predetermined three-dimensional object on a display screen, the button-type device comprising: a) a button-part including 9 buttons of a 3.times.3 array and having combinations of buttons on horizontal, vertical, and diagonal lines, corresponding to the direction of rotation or translation of a three-dimensional object on the three-dimensional axis of rotation or along the axis of translation; and b) a microcomputer for recognizing the depressed combination of buttons, the order of the button depressed, and the key-depressing time and outputting

a control signal so as to rotate or to translate a portion of or whole configuration of the three-dimensional object on the display screen, wherein the three-dimensional object is a cube box having a whole configuration of a cube, wherein the axes of the three-dimensional object comprise: a) an X axis, a Y axis, and a Z axis; b) a HH axis which exists on a same plane of the X and the Y axis at an angle of 45 degrees from the -X and the Y axis; and c) 4 diagonal axes which link a vertex of each regular square, which composes a unit surface of a solid cube, to a vertex of an opposite side by way of a center of mass, further comprising a memory which stores a unit angle of rotation of the predetermined three-dimensional object, wherein the microcomputer, when a predetermined button is depressed, generates a control signal to switch an operation mode from a rotation mode in which a three-dimensional object is rotated on each axis to a translation mode in which the three-dimensional object is translated in the (+) or (-) direction of each axis, or vice versa, wherein the microcomputer, according to the depression of the predetermined button, generates a control signal to change the axis on which the three-dimensional object is rotated or translated, wherein the microcomputer, according to the time of the depression of the predetermined button, generates a control signal for unit translation or continuous translation, *wherein the microcomputer generates a control signal to translate the three-dimensional object along the +X axis when the buttons on a diagonal of the left-bottom direction, which corresponds to the direction of the X axis, are depressed from the button-part of a 3.times.3 array, and to translate the three-dimensional object along the -X axis when the buttons on a diagonal of the right-top direction are depressed.*

None of the closest prior art references (AAPA in view of Patent Number: US 5,236,199) teach the limitations "*wherein the microcomputer generates a control signal to translate the three-dimensional object along the +X axis when the buttons on a diagonal of the left-bottom direction, which corresponds to the direction of the X axis, are depressed from the button-part of a 3.times.3 array, and to translate the three-dimensional object along the -X axis when the buttons on a diagonal of the right-top direction are depressed*", "*wherein the microcomputer generates a control signal to translate the three-dimensional object along the +Y axis when the buttons on a diagonal of the right-bottom direction, which corresponds to the direction of the Y axis, are depressed from the button-part of a 3.times.3 array, and to translate the three-dimensional object along the -Y axis when the buttons on a diagonal of the left-top direction are depressed*", "*wherein the microcomputer generates a control signal to translate the three-dimensional object along the +Z axis when the buttons on a vertical line of upward direction, which corresponds to the direction of the Z axis, are depressed from the button-part of a 3.times.3 array, and to translate the three-dimensional object along the -Z axis when the buttons on a vertical line of downward direction are depressed*", "*wherein the microcomputer generates a control signal to translate the three-dimensional object along the +HH axis when the buttons on a horizontal line of the right direction, which corresponds to the direction of the HH axis, are depressed from the button-part of a 3.times.3 array, and to translate the three-dimensional object along the -HH axis when the buttons on a horizontal line of the left direction are depressed*",

"*wherein the microcomputer generates a control signal to translate the three-dimensional object forward to the front or backward according to the time and the frequency of the depression of the button which is at the position of the second column of the second row from the button-part of a 3.times.3 array*", "*wherein the microcomputer generates a control signal to rotate the three-dimensional object in the direction of counterclockwise on the X axis when the two different buttons on a diagonal, which proceeds to the left-top from the right-bottom, are depressed sequentially from the button-part of a 3.times.3 array, and to rotate the three-dimensional object in the direction of clockwise on the X axis when the two different buttons on the diagonal are depressed sequentially from the left-top to the right-bottom*", "*wherein the microcomputer generates a control signal to rotate the three-dimensional object in the direction of counterclockwise on the Y axis when the two different buttons on a diagonal, which proceeds to the left-bottom from the right-top, are depressed sequentially from the button-part of a 3.times.3 array, and to rotate the three-dimensional object in the direction of clockwise on the Y axis when the two different buttons on the diagonal are depressed sequentially from the left-bottom to the right-top*", "*wherein the microcomputer generates a control signal to rotate the three-dimensional object in the direction of counterclockwise on the Z axis when two different buttons on a horizontal line are depressed sequentially from the left to the right from the button-part of a 3.times.3 array, and to rotate the three-dimensional object in the direction of clockwise on the Z axis when the two different buttons on the horizontal line are depressed sequentially from the right to the left*", "*wherein the microcomputer generates*

a control signal to rotate the three-dimensional object in the direction of counterclockwise on the HH axis when two different buttons on a vertical line are depressed sequentially from the top to the bottom from the button-part of a 3.times.3 array, and to rotate the three-dimensional object in the direction of clockwise on the HH axis when the two different buttons on the horizontal line are depressed sequentially from the bottom to the top", "*wherein the microcomputer generates a control signal to rotate the three-dimensional object in the direction of counterclockwise on the first diagonal axis when the button at the position of the first column of the first row is depressed twice or the button at the third column of the third row is depressed and held for more than a predetermined time from the button-part of a 3.times.3 array, and to rotate the three-dimensional object in the direction of clockwise on the first diagonal axis when the button at the first column of the first row is depressed and held for a predetermined time period or the button at the third column of the third row is depressed repeatedly*", "*wherein the microcomputer generates a control signal to rotate the three-dimensional object in the direction of counterclockwise on the second diagonal axis when the button at the position of the third column of the first row is depressed repeatedly or the button at the first column of the third row is depressed for more than a predetermined time period from the button-part of a 3.times.3 array, and to rotate the three-dimensional object in the direction of clockwise on the second diagonal axis when the button at the third column of the first row is depressed and held for a predetermined time period or the button at the first column of the third row is depressed repeatedly*", "*wherein the microcomputer generates a control signal to rotate the three-dimensional*

object in the direction of counterclockwise on the third diagonal axis when the button which is at the position of the second column of the first row is depressed repeatedly or the button at the second column of the third row is depressed for more than a predetermined time from the button-part of a 3.times.3 array, and to rotate the three-dimensional object in the direction of clockwise on the third diagonal axis when the button at the second column of the first row is depressed and held for a predetermined time period or the button at the second column of the third row is depressed repeatedly", or "*wherein the microcomputer generates a control signal to rotate the three-dimensional object in the direction of counterclockwise on the forth diagonal axis when the button which is at the position of the second column of the second row, the center, is depressed repeatedly from the button-part of a 3.times.3 array, and to rotate the three-dimensional object in the direction of clockwise on the forth diagonal axis when the button at the second column of the second row is depressed for more than a predetermined time period*".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER ZUBAJLO whose telephone number is (571)270-1551. The examiner can normally be reached on Monday-Friday, 8 am - 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer Zubajlo/
Examiner, Art Unit 2629
6/17/09

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2629